THE EUROPEAN INDUSTRY GROUPING
FOR A FUEL CELLS AND HYDROGEN JOINT TECHNOLOGY INITIATIVE

New Energy World IG
fuel cells & hydrogen for sustainability

The Multi – Annual Implementation Plan

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FCHInStruct

SGA - Brussels, Oct 15, 2008

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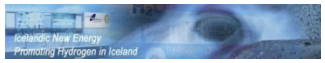
Strategic Role of the MAIP

..the European Strategic Energy Technology (SET) Plan has identified fuel cells as a key technology for Europe...

Facilitating European collaboration

- Establish and execute long-term strategy
- Provide focus and scope to high level priorities
- Improve collaboration between industry and research
- Collaborate and coordinate with national and regional activities

Industry Grouping Members



Research Grouping Members

Total: 47 out of 57

215.505 M€
(47 participants)

1838 persons
(47 participants)

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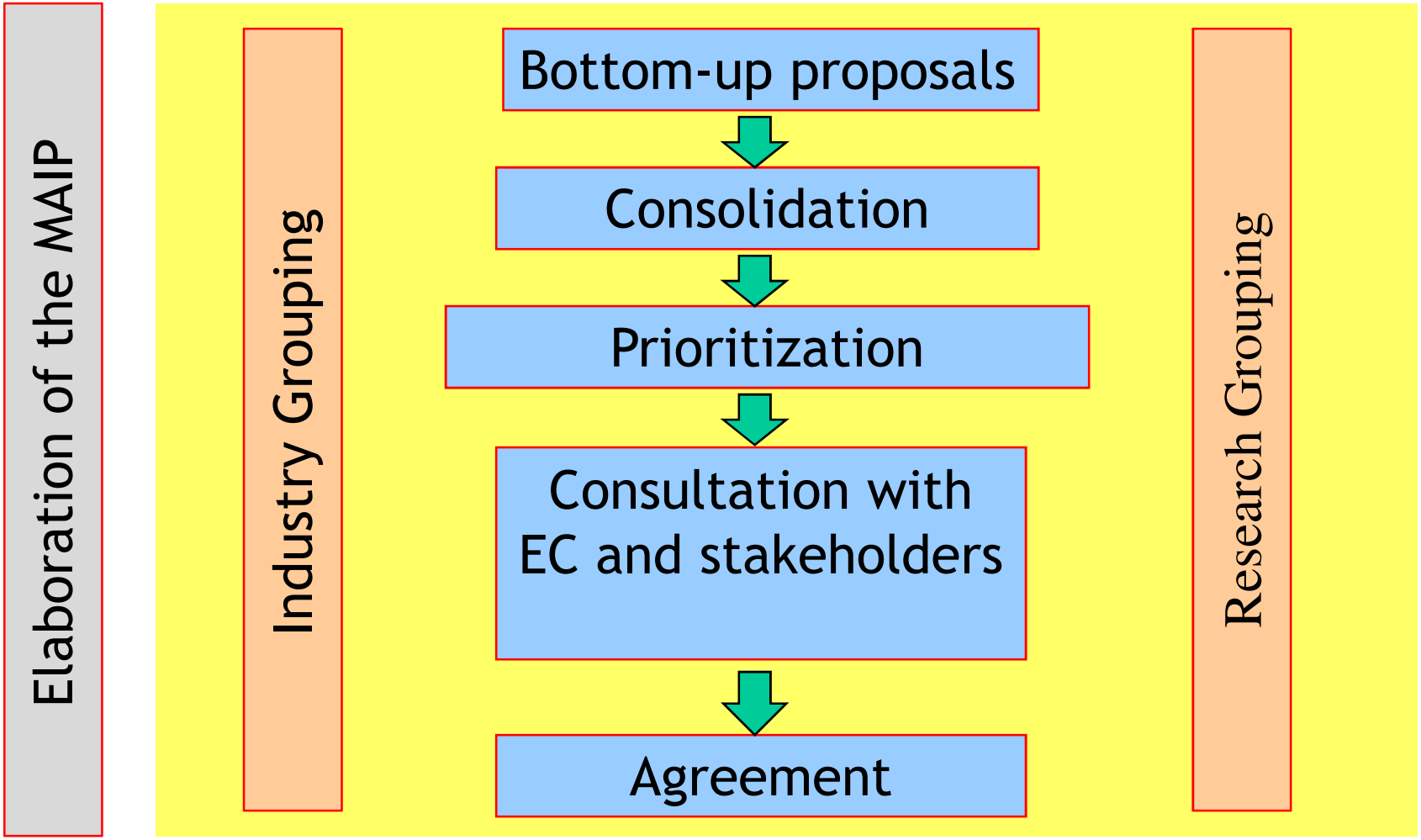
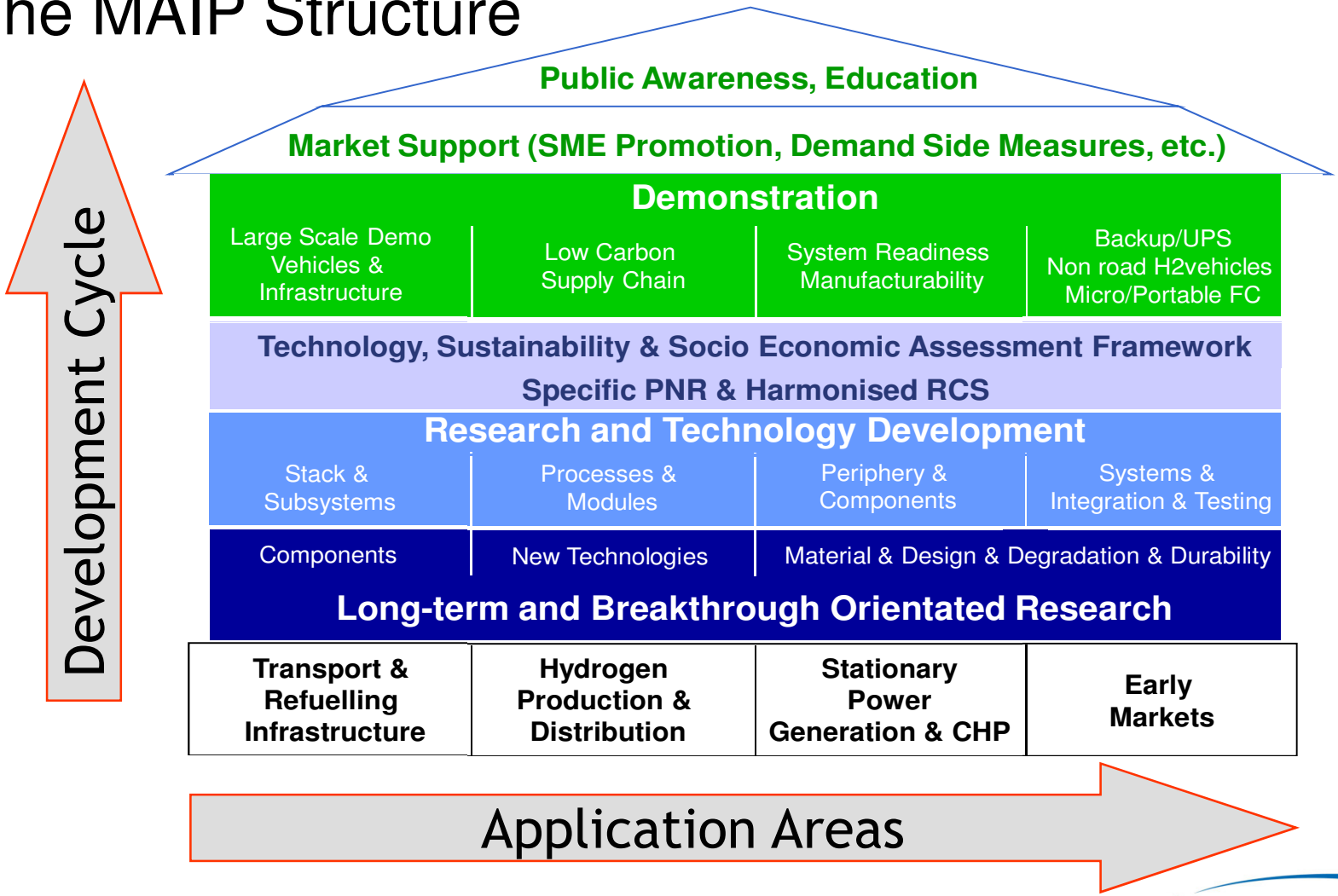
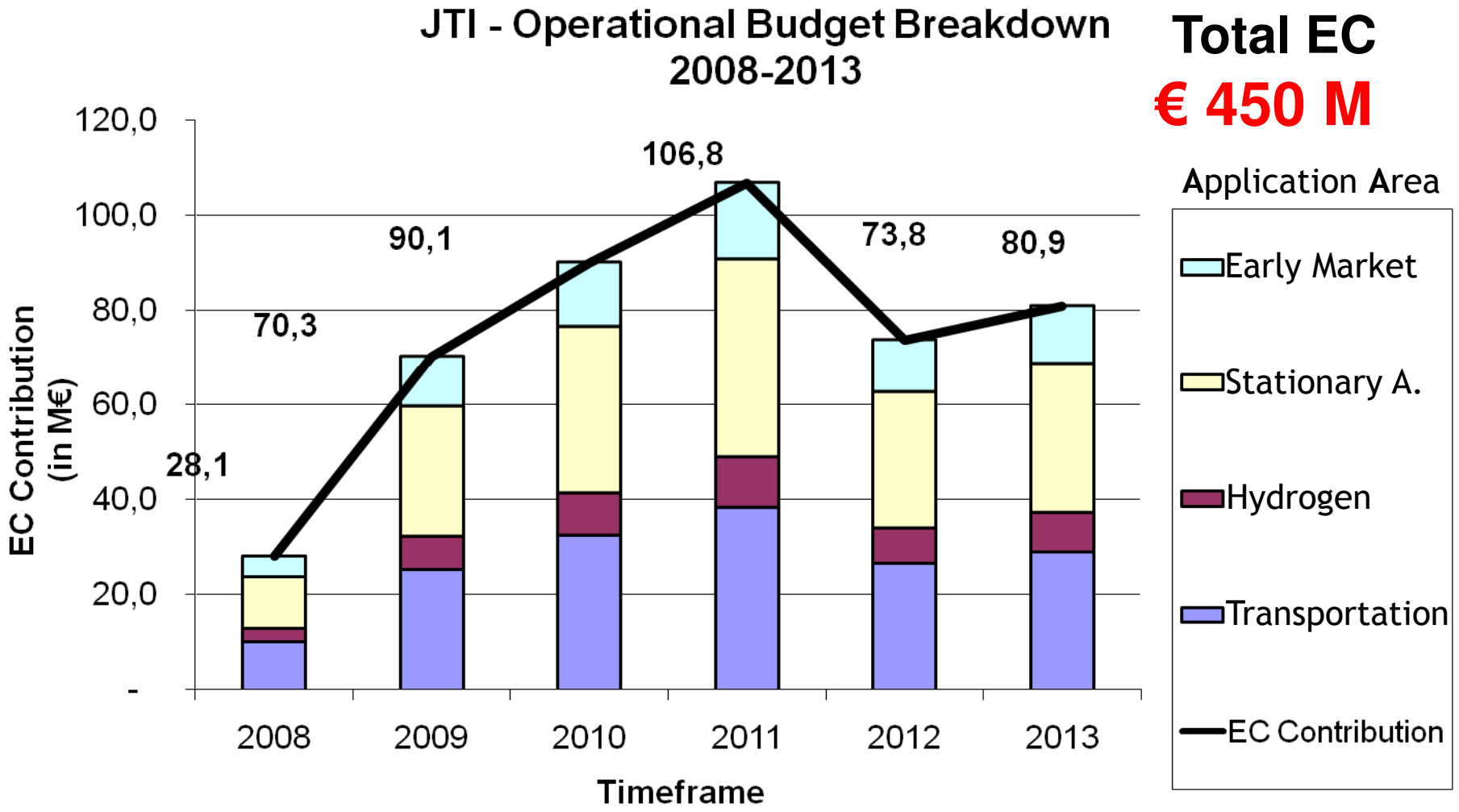


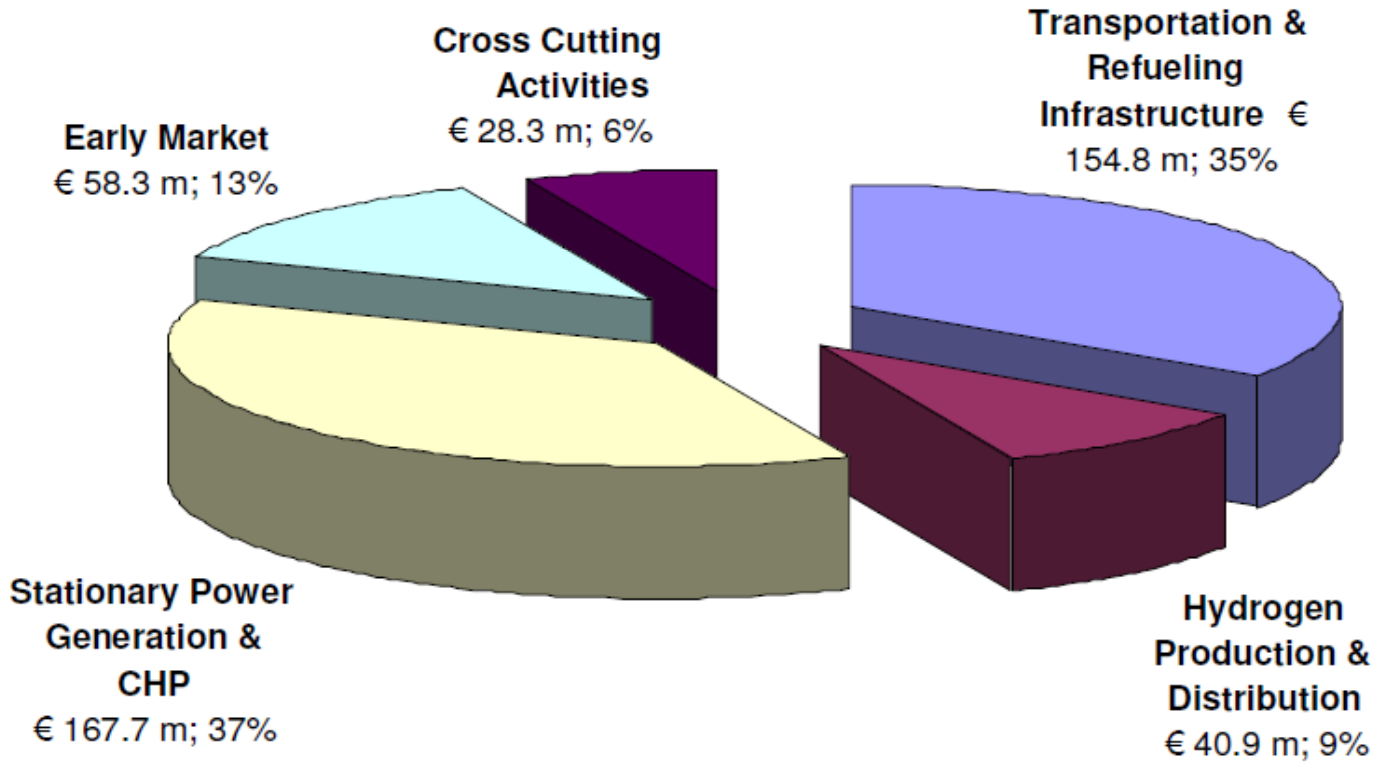
The MAIP Structure




JTI - Operational Budget Breakdown
2008-2013
Total EC
€ 450 M
EC Contribution (in M€)
120,0
100,0
80,0
60,0
40,0
20,0
-
28,1
70,3
90,1
106,8
73,8
80,9
2008
2009
2010
2011
2012
2013
Timeframe
Application Area
Early Market
Stationary A.
Hydrogen
Transportation
EC Contribution

€ 1 billion public and private investment

By Application Area



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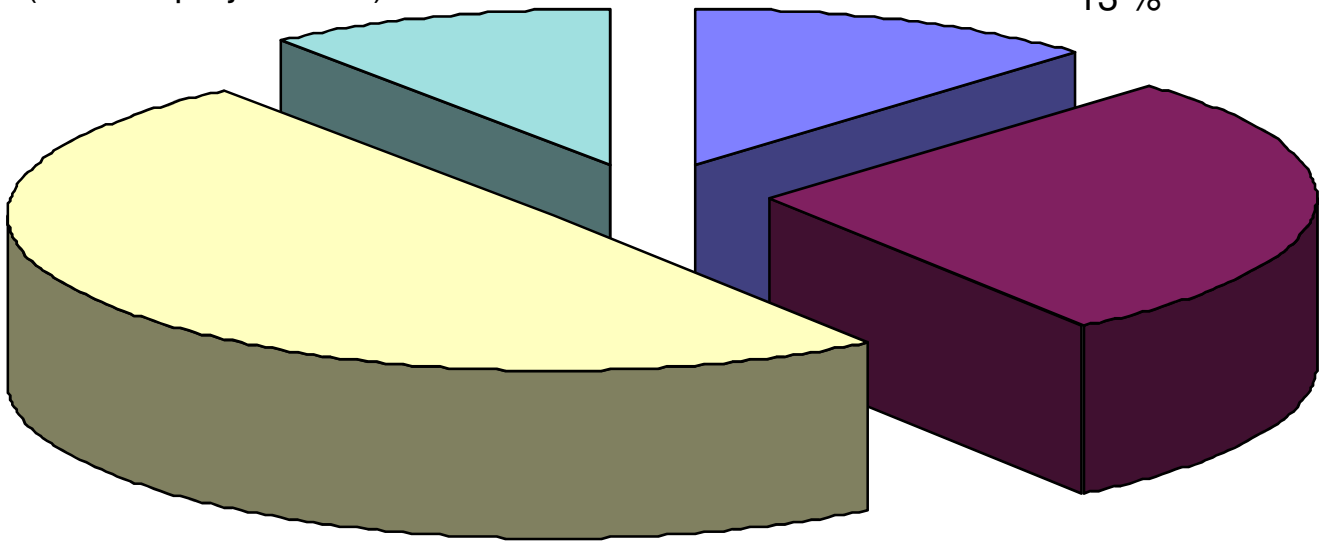
€ 1 billion public and private investment

By Action Category



Support Actions
6 %
(+ 5% at project level)

Long-term and break- through research
13 %

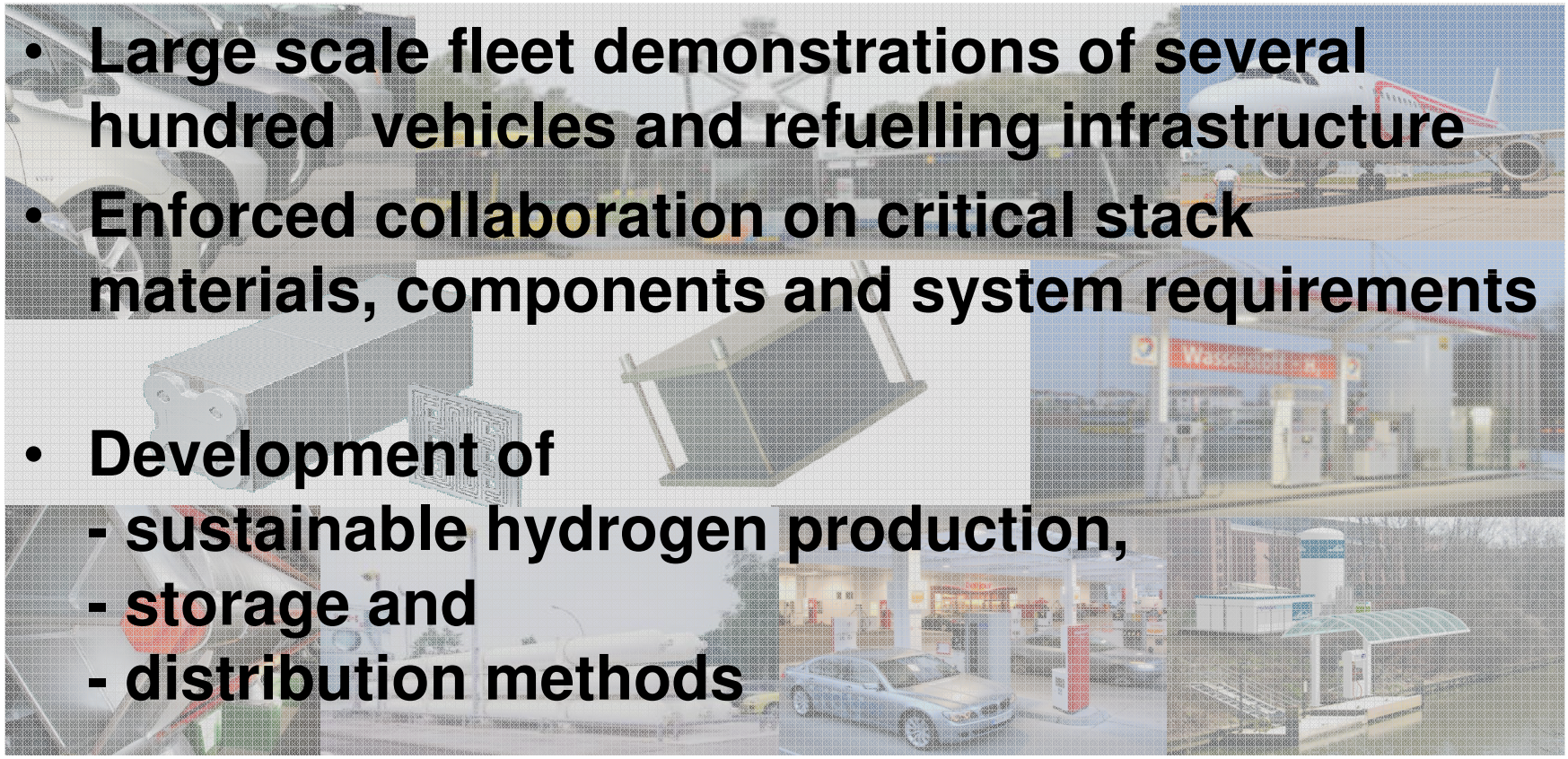
Demonstration
52 %

Research and technological development
29 %

PRIORITIZATION SCHEME

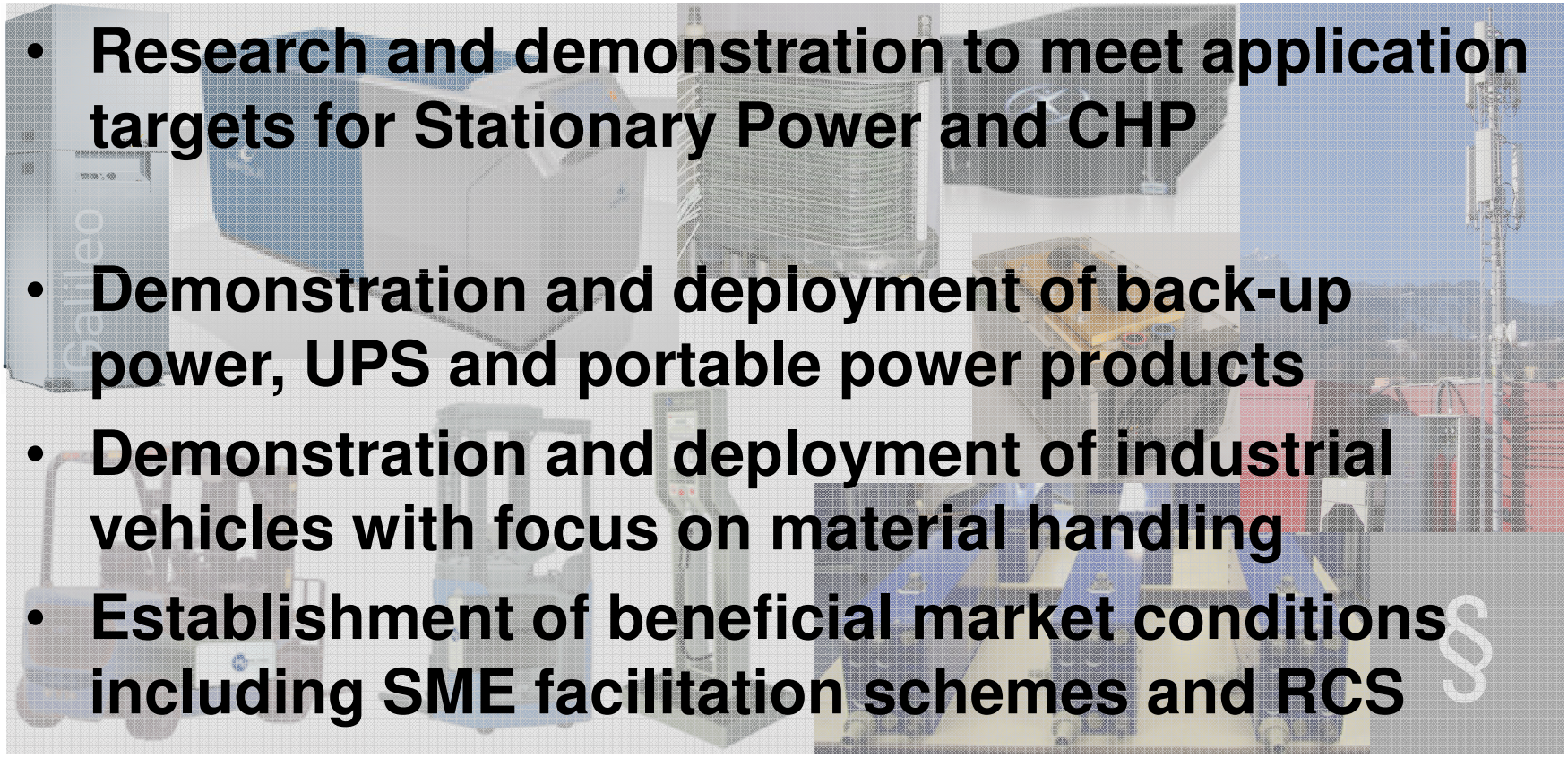
Level		Description/Rational
Political criteria	1. Environmental Goals	European "20-20-20 targets": RE - 20% renewable penetration CO2 - 20% reduction of CO2 EE - 20% gain in energy efficiency + Reduction of local emissions
	2. Energy-Security	Improvement of energy security, availability of secure and affordable energy
Technical criteria	3. EU competitiveness	1. Relevant European participation in demo 2. European clusters to achieve critical mass 3. World class technologies by collaboration 4. Critical IPR 5. European RCS to remove market barriers 6. European market promotion schemes 7. Common tools for education, dissemination 8. Interaction between research and industry
	4. Critical cost reduction	Activities to achieve critical cost reduction

Key actions target commercial markets



- **Large scale fleet demonstrations of several hundred vehicles and refuelling infrastructure**
- **Enforced collaboration on critical stack materials, components and system requirements**
- **Development of**
  - sustainable hydrogen production,
  - storage and
  - distribution methods

Key actions target commercial markets



- **Research and demonstration to meet application targets for Stationary Power and CHP**
- **Demonstration and deployment of back-up power, UPS and portable power products**
- **Demonstration and deployment of industrial vehicles with focus on material handling**
- **Establishment of beneficial market conditions including SME facilitation schemes and RCS**

Program Targets & Milestones

Transportation & Infrastructure	2010	• Up to 10 road vehicles on 1 demo site and for demonstration on additional sites in Europe with re-fuelling capacity for up to 50 road vehicles • Up to 20 buses on 3 sites with appropriate refuelling capacity
	2015	• Up to 500 road vehicles and 3 additional demo sites with 3 new refuelling stations • Up to 500 buses on 10 EU sites with at least 7 new refuelling stations • System cost of 100 €/kW, durability 5000h for car propulsion systems • Ramp up scenario for European refuelling stations

Program Targets & Milestones

Hydrogen Production & Distribution	2010	• Appropriate hydrogen supply chain to match demonstration requirements
	2015	• 10 - 20 % of hydrogen demand, carbon free/lean • Cost of delivered H2 at fuelling station < 5 €/kg - centralized and decentralised, excl. taxes
Stationary Power & CHP	2010	• 3 - 7MW electrical capacity installed for pre-commercial demonstration phase
	2015	• 100 MW electrical capacity installed • Cost of 5 000 - 6 000 €/kW (Micro CHP FC) and 1,500 - 2,500€/kW for commercial/industrial units
Early Markets	2010	• 10 000 units in the market, thereof 6000 new sales
	2015	• 50 000 new units in the market

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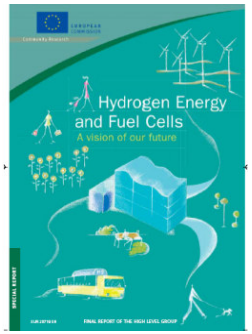
VISION
Hydrogen Energy And Fuel Cells
(2003)



STRATEGY
Strategic Research Agenda
Deployment Strategy
Strategic Overview
(2005)

It is now to implement!

IMPLEMENTATION
Implementation Plan
(March 2007)

Documents available at:
www.hfpeurope.org/hfp/keydocs